DRAWING NUMBER

PLAN HOLD CORPORATION • IRVINE, CALIFORNIA

A-104 Comm Dept DRAWING NUMBER 232/

FP-2 7-15-97

HALON 1301 SYSTEM

A. GENERAL

1. Materials: New, unused, best of their respective kinds and free from defects. Basis of quality shall be latest standards of ASTM, ASA, Federal Specifications, or other acceptable standards.

2. Approvals: Prepare all required documents, drawings and perform all required tests and pay all required charges.

3. Drawings are diagrammatic and indicate general arrangement of work.

4. Contractor shall be held to have examined the site for his work before having submitted his proposal. No additional compensation will be allowed for conditions found during the course of the contract.

5. Contractor shall coordinate his work with all other trades.

6. Contractor shall verify all measurements at site and be responsible for correctness of same.

7. All work shall be installed readily accessible for operation, maintenace and repairs.

8. All work and equipment to be fully guaranteed for one (1) year from the date of final payment and acceptance.

9. All cutting and patching in connection with this trade shall be done by this Contractor.

10. Investigate each space through which equipment must be moved. Where necessary equipment shall be shipped in sections for moving through restricted space available.

11. Store materials in spaces designated by owner.

12. Remove rubbish from premises as often as necessary or directed.

13. Equipment intended for permanent installation shall not be operated for temporary purposes.

14. All work and equipment shall be cleaned to the satisfaction of the owner before turning over to the owner.

15. Shop drawings shall be submitted for approval prior to ordering and installation of same. Four copies of each submittal are required. Manufacturer's standard specification shall apply to all units specified.

16. The contractor shall make arrangements with the owner prior to any shutdowns of the operating systems.

17. Painting: Pipe hangers primed with zinc chromate, iron work installed by this contractor, two (2) coats of red lead and oil prime.

18. All equipment to be started-up and checked-out by contractor with assistance from manufacturer's personnel.

B. WORK INCLUDED

1. This specification is not intended to be a complete itemization of the Halon system work required, but is for the guidance of this Contractor in estimating his work. All work properly belonging to or usually performed under Halon system work is included in this contract.

2. It is intended that all items of material and equipment mentioned hereinafter shall be read as if the words "Furnish and Install" were prefixed hereto. Where the words "Furnished by Others" are used, it is intended that this Contractor shall furnish all labor and devices required to connect such items to the Halon system. The scope of work shall include the following:

a. Halon 1301 Cylinder Bank Storage.

b. All Control Equipment.

c. All Auxiliary Equipment

d. Pipe and Fittings.

e. All Electrical Wiring.

f. System Test.

C. WORK EXCLUDED

1. Electrical service to new system control panel.

2. Interconnection between new control panel and fire alarm control panel.

D. INTENT OF SPECIFICATIONS AND DRAWINGS

1. This specification is not intended to describe, nor the drawings to show, in detail, the various items of equipment, or the connections thereto. This Contractor shall, as part of the contract, furnish and install all equipment, accessories, supports, pipe connections, fittings, valves, controls, testing, etc., as herein specified or required to make the system complete and ready for proper operation.

2. Any item of work described in this specification, but not shown on the drawings, or vice-versa, shall be furnished and installed as if items are both specified and shown.

3. Each bidder shall visit the site and become informed as to the conditions of the premises and the extent and character of the work required.

4. Where the words "Provide", "Supply" or "Furnish" are used in this specification, they shall be understood to mean the complete work in connection therewith. That is the furnishing, installing, connecting, testing and guaranteeing of the items specified and paying all cost in connection therewith. The word "Approved" as used in this specification shall be understood to mean, approved by all Authorities having jurisdiction.

E. SYSTEM CONSIDERATIONS AND REQUIREMENTS

1. This specification covers the requirement for an automatic fixed fire suppression system using Halon 1301 as the agent. The system will be designed for use in areas above and below the raised floor of the Computer Room.

2. This Contractor shall supply and install all specified equipment and accessories including all electrical work (unless specified otherwise) for a complete, electrically supervised system as specified and as shown on the plans.

3. All electrical work, including conduit and wiring, shall be installed in accordance withe requirements of the electrical specification of this project.

The Contractor shall specifically prepare shop drawings which are to an indicated scale with lettering no smaller than one-eighth inch and easily reproducible. These plans will show the quantity, location and marking of all systems components. Included shall be a description and routing of all piping. Flow calculations shall be included. Agent shall be discharged within 10 seconds. System electrical schematics and diagrams shall be provided including a description of all interlock functions. Four sets of all drawings shall be submitted to the Architect, Engineer and appropriate authorities having jurisdiction for approval.

4. Upon completion of installation, a meeting shall be held at the site with contractor, equipment supplier, tenant and Port Authority present. The contractor shall familiarize the tenant and Port Authority present with system components, system functions and recommended procedures. At this time a functional test of the system shall be demonstrated, including a discharge test. Such test to demonstrate ability of the system to achieve and maintain a 6% design agent concentration for the required (5) minute soak time. The contractor shall provide the necessary personnel and instruments to conduct this test. A detection system acclimation period may be utilized to insure stability of the overall system. The contractor will provide the owner with a system check list which the owner will sign as acceptance of the system. The contractor will provide the owner with a complete operational and maintenance manual as well as a written summary of any functional tests conducted. The contractor shall be capable of conducting semi-annual system inspections and be equipped to recondition the complete system within 24 hours in the event of a system actuation.

5. Equipment and accessories furnished by the contractor shall be the standard components of a specified manufacturer. Catalog numbers and model designations shall indicate design, quality and type of material as well as required operating characteristics. All equipment shall be listed by Underwriter's Laboratories or approved by Factory Mutual Engineering Corporation.

6. Substitution of components purported to be equal to thoses specified in the system design shall be considered only when the following requirements have been met:

a. A complete list of such such substituted components, with 3 copies of working drawings thereof, shall be submitted to and be approved by the architect and/or consulting engineer, not less than 10 claendar days prior to the scheduled date for opening of bids.

b. The contractor shall furnish satisfactory manufacturer's proof that the substituted products are, in fact, equal or superior in quality and performance to those described in the original specifications. Such evidence shall be submitted to an accepted by the architect and/or consulting engineer not less than 10 calendar days prior to the scheduled date for opening of bids.

7. The Halon 1301 Fire Suppression System shall include a detection subsystem with provision for both pre-alarm and automatic agent release.

a. Pre-alarm shall be accomplished by smoke detectors.

b. Automatic agent release shall be accomplished by "cross-zoned" smoke detectors. "Cross-zoned" smoke detection refers not to two separate Fire Protection zones in the usual sense, but to the use of two separate detector loops or circuits within the same protected area. The smoke detectors must be wired so that at least two units, one from each loop, must react to the presence of smoke before the extinguishing system can be actuated. This "cross-zoned" circuiting minimizes unnecessary agent releases. Alarm only will occur if just one detector detector is activated. Detector spacing shall be in accordance with NFPA Std. 72E.

F. SYSTEM COMPONENTS:

1. Smoke Detectors:

a. Product or combustion detectors shall be dual chamber, ionization type as manufactured by "Pyrotronics" or equal.

b. The unit shall be listed by ULI, ULC, and FM approved as a signal and release device. Unit shall be installed and field adjusted by the manufacturer's representative.

c. Smoke detectors shall be equipped with air shields.

2. *Halon Alarm Panel:* (Fully Recessed)

a. The Halon alarm panels as manufactured by "Pyrotronics" or equal shall contain the following:

F. 2. a. 1) Door Trip.

2) Manual Pull Station.

3) Audio-Visual Warning Signals.

4) Audio-Visual Halon Discharge Signal.

3. Halon Control Panel (Fully Recessed)

a. The multizone electrical control panel, as manufactured by "Pyrotronics or equal shall be capable of operating from smoke detectors or manual pull stations to provide pre-alarm or release of agent required. It shall also provide the power to operate the extinguishing sub-system and perform such other secondary functions as may be required.

b. The control unit shall be housed in a recessed, sheetmetal enclosure suitable for protecting electrical circuits. It shall be of NEMA 1 code gauge, metal cabinet with hinged, locked doors. Knockouts shall be provided for external wiring in accordance with standard electrical practices. The enclosure (rough-in box) shall be available for installation prior to installation of control electrical components and doors. A trimplate shall be available to provide a uniform finish between wall and control unit enclosure.

c. Upon operation of the detector, the unit shall provide power for operation of the extinguisher sub-system; cause an audible and visual local alarm to actuate and energize auxiliary relays for remote alarm or equipment shutdown. The unit shall be capable of providing supervision of the following functions:

1) Close normally open dampers.

2) Shutdown AC units 1 and 2.

3) Shutdown computer equipment.

4) Perform all functions for the Halon alarm panels.

5) Provide facilities for tie-in connection to the existing fire alarm system.

6) Time delay relays for purge fan.

7) Detection circuits.

8) Input power.

d. Wiring from Halon control panel to the equipment of items No. 1, 2, 3, 4, 6, 7 and 9 shall be by the electrical contractor.

e. The necessary indicator lamps and control switches shall be mounted on a panel which is visible but located behind a locked, glass-paneled door. The indicator/control panel shall be of a dead front configuration in compliance with OSHA regulations; the back plate behind the terminal boards shall be painted orange to signify "live" conditions in this area.

f. The control unit shall be solid state electronics employing plug-in circuit modules for detector and initiator (firing) circuits. The unit shall operate on 120 volts AC, 50-60 hertz. Power consumption shall be 10 watts steady state with a peak of 200 watts. Provisions shall be made for operation from a self-contained, 24 volts DC emergency power supply. The units shall have built-in rechargeable standby batteries of 50 amp-hour capacity. All battery recharging and power leads shall be designed for ease of installion with no special tools required. It shall be constructed to permit maintenance of qualified electricians without special tools or training. The control unit shall be UL listed and FM approved.

g. The control unit shall have an adjustable discharge time delay circuit which will be activated upon the actuation of the second detector zone. This circuit will delay Halon discharge for a set period of time allowing for evacuation of personnel or use of the hold and investigate station.

h. The hold and investigate station shall be mounted within the protected area. Pressing of the hold button shall initiate an adjustable timer which interrupts the automatic discharge sequence. If, after the hold period, the system is still in alarm, the discharge time delay circuit will be reinitiated causing Halon release. The hold sequence may be reactivated as many times as necessary by use of the hold button. If the cause of the alarm can be manually corrected, the system shall be capable of being reset without release of the Halon.

4. Extinguishing Sub-Systems

a. The system shall be designed to provide a six percent (6%) volume concentration of extinguishing agent with discharge time not to exceed 10 seconds. The system shall be capable of meeting the performance parameters in the National Fire Protection Association Standard 12A. Each extinguishing sub-system shall include the following components:

Agent Storage Container

Discharge Nozzle

Nozzle Deflector

Initiator Assembly

Halon 1301

b. Agent storage container shall include a 0-600 psig pressure gauge. The containers shall conform to all applicable specifications as promulgated by the Department of Transportation. Container shall accomodate agent charge weights in one (1) pound increments. The container shall automatically relieve between 850 and 1000 psi in the event of excessive pressure buildup. Filled containers shall be super-pressurized with dry nitrogen to 360 psig at 70°F to aid in rapid agent distribution, particularly at lower temperatures. Container design shall permit on-site reconditioning and refilling, when required. The discharge end of the container shall be provided with a female two inch (2") pipe thread. Devices and connecting electrical leads shall be completely supervised.

5. HALON SYSTEM PIPING, FITTINGS AND VALVES

a. Piping

1) All Halon piping shall be standard weight galvanized steel pipe and galvanized malleable iron beaded fittings, screw type.

2) Valves shall be manufactured and installed in conformance with all requirements of N.F.P.A. No. 12A.

6. It is required that the GENERAL CONTRACTOR be responsible for sealing the floor and wall openings to minimize the leakage of HALON gas.

7. All Halon system components shall be labelled as to BS&A approval.

8. All Halon wiring shall have teflon insulation.

SPRINKLER SYSTEM

A. GENERAL

1. Materials: New, unused, best of their respective kinds and free from defects. Basis of quality shall be latest standards of ASTM, ASA, Federal Specifications, or other acceptable standards.

2. Approvals: Prepare all required documents, drawings and perform all required tests and pay all required charges.

3. Drawings are diagrammatic and indicate general arrangement of work.

4. Contractor shall be held to have examined the site for his work before having submitted his proposal. No additional compensation will be allowed for conditions found during the course of the contract.

5. Contractor shall coordinate his work with all other trades.

6. Contractor shall verify all measurements at site and be responsible for correctness of same.

7. All work shall be installed readily accessible for operation, maintenance and repairs.

8. All work and equipment to be fully guaranteed for one (1) year from the date of final payment and acceptance.

9. All cutting and patching in connection with this trade shall be done by this Contractor.

10. Investigate each space through which equipment must be moved. Where necessary equipment shall be shipped in sections for moving through restricted space available.

11. Store materials in spaces designated by owner.

12. Remove rubbish from premises as often as necessary or directed.

13. Equipment intended for permanent installation shall not be operated for temporary purposes.

14. All work and equipment shall be cleaned to the satisfaction of the Resident Port Authority Architect before turning over to the owner.

15. Shop drawings shall be submitted for approval prior to ordering and installation of same. Four copies of each submittal are required. Manufacturer's standard specification shall apply to all units specified.

16. Painting: Pipe hangers primed with zinc chromate, iron work installed by this contractor, two (2) coats of red lead and oil prime.

B. WORK INCLUDED

1. This specification is not intended to be a complete itemization of Sprinkler work required, but is for the guidance of this Contractor in estimating his work. All work properly belonging to or usually performed under Sprinkler work is included in this contract.

2. It is intended that all items of material, and equipment mentioned hereinafter shall be read as if the words "Furnish and Install" were prefixed thereto.

C. GENERAL DESCRIPTION OF THE WORK

1. The work in this contract shall consist of the following:

a. The architectural, mechanical and electrical drawings of the new work shall be very closely studied, noting all areas where existing pipes, ducts, etc., must be revised so as to allow for the installation of new ceiling, walls, aisle spaces, doors, lights, ductwork, etc.

b. After shop drawings have been approved by the licensed professional Architect or Engineer, one sepia and one black and white print of each approved shop drawing shall be forwarded to the Port Authority Risk Manager Division for contract compliance.

D. ALTERATION WORK

1. Under no circumstances will this Contractor or his workmen be permitted to use any part of the building as a shop, except parts designated by the resident Port Authority Architect for such purposes.

2. Unnecessary noise shall be avoided at all times and necessary noise shall be reduced to a minimum.

E. SPRINKLER HEADS

1. The Contractor shall furnish and install all new sprinkler heads. The heads shall be of a make and design that has received the approval of the Resident Port Authority Architect.

2. All pendant type sprinkler heads (in finished hung ceiling areas) shall be "Reliable" Sprinkler Co. Model "G1" Flushtype, chrome and brass finish with ½ Orifice "G1".

3. All upright type sprinkler heads (in unfinished, no hung ceiling areas) shall be "Reliable" Sprinkler Co. Model "D" rough brass type with ½" Orifice.

4. The temperature rating for sprinkler heads shall be 65°F.

5. In addition to the heads actually required, this Contractor shall furnish a minimum of six heads of each type and temperature rating use, and two suitable socket wrenches, contained in a neat steel box, for use as a service kit on the job. The steel box shall be installed in the location where directed by the Resident Port Authority Architect.

F. PIPING AND FITTINGS

1. Sprinkler piping shall be schedule 40 black steel with malleable iron screwed fittings, 150 lb.

G. PIPE HANGERS

1. All horizontal piping shall be supported with adjustable, clevis type pipe hangers. Hangers, installation methods, spacing, etc., shall conform to the requirements of Sec. 3-15, NFPA 13.

H. TESTS

1. The tenant's sprinkler installation shall be tested before being connected to the existing sprinkler mains. Test procedures shall be as directed by the Resident Port Authority Architect; test results shall meet with his approval.

2. All piping to be concealed shall be tested before pipe enclosures are completed.

3. All tests shall be made in the presence of the Resident Port Authority Architect. The Contractor shall notify them in advance of his readiness for the tests.

4. This Contractor shall continue to be responsible for the tightness of the systems until its final acceptance, regardless of the results of the test.

I. CO-OPERATION

1. This Contractor shall give the General Contractor full co-operation and shall co-operate with the Plumbing, Heating and Ventilating and Electrical Contractors as to space conditions, so as not to interfere with each other's work.

J. QUALITY OF MATERIAL

1. All material and equipment furnished and installed shall be new and shall be of the best quality of the kind specified.

K. DRAINS

1. *Auxiliary drains shall be installed at all low points in the system.* Installation shall be in accordance with the requirements of Sec. 3-11, NFPA8. All pressure and gravity drains shall spill to safe place.

ESCUTCHEONS

1. Where pipes pass through floors, ceilings, or walls, there shall be installed, adjustable escutcheons of approved type and make. For unfinished spaces, there shall be plain steel escutcheons and stainless steel or satin finish chrome plated steel for finished spaces.

M. The complete sprinkler installation shall comply with NFPA 13 and the N.Y. City Building Code.

PCA/TAA NO. 232/
DATE APPROVED 7/1/92

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REVISIONS
NO. | DESCRIPTION | DATE

CANTOR, FITZGERALD SECURITIES CORP.
ONE WORLD TRADE CENTER
NEW YORK, N.Y.

JOB NUMBER 7002
DATE 15-7-82
DRAWN
SCALE: NONE
DRAWING NUMBER FP-2

PROJECT TITLE NEW COMPUTER ROOM - 2
FLOOR 104TH
DRAWING TITLE HALON & SPRINKLER SPECIFICATIONS